

Patent claims

1. Fuel injection system with a fuel reservoir (10) to which fuel is fed via at least one first pump (12) and from which fuel is discharged via injectors (14),  
5 characterized in that  
the feed pressure of the first pump (12) is set as a function of the fuel temperature and the vaporization behavior of the fuel.
2. Fuel injection system in accordance with claim 1,  
10 characterized in that  
the feed pressure of the first pump (12) is set to a minimum value at which a cavitation through vaporization of fuel is just avoided.
3. Fuel injection system in accordance with claim 1 or 2,  
15 characterized in that  
the feed pressure of the first pump is set by a control and/or regulation device (16) which controls the first pump (12).
4. Fuel injection system in accordance with claim 3,  
characterized in that  
20 the control and/or regulation device (16) determines the fuel temperature through modelling.
5. Fuel injection system in accordance with claim 3,  
characterized in that  
the fuel temperature recorded by a temperature sensor is fed to  
25 the control and/or regulation device (16).
6. Fuel injection system in accordance with claim 3,  
characterized in that  
the control and/or regulation device (16) determines the vaporization behavior of the fuel through modelling.

7. Fuel injection system in accordance with claim 6,  
characterized in that  
the vaporization behavior of the fuel is determined via a fuel  
volume adaptation algorithm.

5 8. Fuel injection system in accordance with claim 6 or 7,  
characterized in that  
a Lambda probe output signal is employed for determining the  
vaporization behavior of the fuel.

9. Fuel injection system in accordance with one of the previous  
10 claims,  
characterized in that  
the first pump is a low-pressure pump (12), and that a second  
pump in the form of a high-pressure pump (18) is connected  
downstream from the low-pressure pump (12)

15 10. Method for determining the feed pressure of a first pump  
(12) of a fuel injection system which features a fuel reservoir  
(10) to which fuel is fed via the first pump (12) and from  
which fuel is discharged via injectors (14),  
characterized in that  
20 the feed pressure of the first pump (12) is set as a function  
of the fuel temperature and the vaporization behavior of the  
fuel.

11. Method according to claim 10,  
characterized in that  
25 the feed pressure of the first pump (12) is set to a minimum  
value at which a cavitation through vaporization of fuel is  
just avoided.

12. Method in accordance with claim 10 or 11,  
characterized in that  
30 the feed pressure of the first pump is set by a control and/or

regulation device (16) which controls the first pump (12).

13. Method in accordance with one of the claims 10 to 12,  
characterized in that  
the fuel temperature is determined by modelling.

5 14. Method in accordance with one of the claims 10 to 12,  
characterized in that  
the fuel temperature is recorded via a temperature sensor.

15. Method in accordance with one of the claims 10 to 14,  
characterized in that  
10 the vaporization behavior of the fuel is determined by  
modelling.

16. Method in accordance with one of the claims 10 to 15,  
characterized in that  
the vaporization behavior of the fuel is determined via a fuel  
15 volume adaptation algorithm.

17. Method in accordance with one of the claims 10 to 16,  
characterized in that  
a Lambda probe output signal is employed for determining the  
vaporization behavior of the fuel.

20 18. Method in accordance with one of the claims 10 to 17,  
characterized in that  
the first pump is a low-pressure pump (12), and that a second  
pump in the form of a high-pressure pump (18) is connected  
downstream from the low-pressure pump (12)